



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/656,174	09/08/2003	Kazushige Okumoto	116997	8389
25944	7590	07/07/2006	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			PILKINGTON, JAMES	
			ART UNIT	PAPER NUMBER
			3682	

DATE MAILED: 07/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/656,174

Applicant(s)

OKUMOTO ET AL.

Examiner

James Pilkington

Art Unit

3682

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 9/8/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed of application JP 2002-266875, filed on September 12, 2002. However, a section titled Cross-References to Related Applications (See 37 CFR 1.78 and MPEP § 201.11) must be inserted into the specification above the background.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "armature" (clm 1), "bearings having rollers or needles" (clm 4) and the different clearances (clms 6, 7, 11 and 12) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered. With regards to the clearances it is unclear to the examiner from where these clearances are being determined.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for

consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 7 and 12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Re clms 7 and 12, how is it possible for the clearance of the plain bearing to be larger than the rolling-contact bearings? Both bearings appear to be in direct contact with there respective members. If they are in direct contact how is there any clearance at all and wouldn't everything be larger than zero clearance? See above drawing objections.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1, 5 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 9 recites the limitation "its armature" in lines 2. There is insufficient antecedent basis for this limitation in the claim.

The term "closely" in claim 5 is a relative term which renders the claim indefinite. The term "closely" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. How far away would an object have to be to still be considered close to another?

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-8, as best understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Isozumi, USP 4,923,229.

Re clm 1, Isozumi discloses a starter comprising:

- A motor (2)
- A rotary output shaft (3) (also motor armature)
- A plurality of rolling-contact bearings (26,27) having rolling members.

- A pinion shaft (21) inserted in an inner cylindrical bore of each rolling-contact bearing (see Figure 1) so as to be supported by a housing (7)
- A plain bearing (28)
- A pinion gear (9) attached to the distal end of the pinion shaft (21)
- A ring gear (C5/L30-32)

Re clm 2, said rolling-contact bearings (26,27) comprise a first rolling contact bearing (26) and a second rolling contact bearing (27) arranged next to each other in the axial direction with a predetermined clearance therebetween (see Figure 1 or Figure 2 characters 43,44).

Re clm 3, each rolling-contact bearing is a ball bearing having balls serving as said rolling member (see Figure 1).

Re clm 4, each rolling-contact bearing has rollers (the balls are rollers).

Re clm 5, a one-way clutch (8) coupled around said output shaft (3) via a helical spline (C4/L46-47) and shiftable on said output shaft in the axial direction together with said pinion shaft to transmit rotation of said output shaft to said pinion shaft wherein an axial end of said rolling-contact bearings (26,27) closer to said motor (2) is disposed closely to said one-way clutch (8) when said pinion shaft (21) is positioned far from said motor (2) to engage the pinion gear (9) to the ring gear (C5/L30-32).

Re clm 6, a one-way clutch (8) coupled around said output shaft (3) via a helical spline (C4/L46-47) and shiftable on said output shaft in the axial direction together with said pinion shaft to transmit rotation of said output shaft to said pinion shaft, wherein a coupling clearance of said helical spline coupling is larger than a clearance between

said rolling-contact bearings (26,27) and said pinion shaft. See Figure 1 for bearing clearance and Figure 3 for coupling clearance.

Re clm 7, a clearance between said plain bearing (28) and said output shaft (3) is larger than a clearance between said rolling contact bearings (26,27) and said pinion shaft (21).

Re clm 8, a speed reduction device (6) is disposed between said armature and said output shaft to reduce rotation of said armature and transmit reduced rotation to said output shaft.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 9-13, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Isozumi '229 in view of Miyazaki, USP 5,996,230.

Re clm 9, Isozumi discloses a starter comprising:

- A motor (2)
- A rotary output shaft (3) (also motor armature)
- A pinion shaft (21) inserted in an inner cylindrical bore of each rolling-contact bearing (see Figure 1) so as to be supported by a housing (7)
- A plain bearing (28)
- A pinion gear (9) attached to the distal end of the pinion shaft (21)

- A ring gear (C5/L30-32)

Isozumi does not disclose a ball bearing having a plurality of rows of balls which are aligned in an axial direction and interposed between a pair of external and internal rings.

Miyazaki teaches a ball bearing (Figure 13) having a plurality of rows of balls (5) which are aligned in an axial direction and interposed between a pair of external (28) and internal (27A, 27B) rings for the purpose of allowing for efficient assembly of devices (C1/L20-24) since only one bearing assembly is used.

It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the teachings of Isozumi and provide a ball bearing having a plurality of rows of balls which are aligned in an axial direction and interposed between a pair of external and internal rings, as taught by Miyazaki, for the purpose of allowing for efficient assembly of devices since only one bearing assembly is used.

Re clm 10, Isozumi discloses a one-way clutch (8) coupled around said output shaft (3) via a helical spline (C4/L46-47) and shiftable on said output shaft in the axial direction together with said pinion shaft to transmit rotation of said output shaft to said pinion shaft wherein an axial end of said rolling-contact bearings (26,27) closer to said motor (2) is disposed closely to said one-way clutch (8) when said pinion shaft (21) is positioned far from said motor (2) to engage the pinion gear (9) to the ring gear (C5/L30-32).

Re clm 11, Isozumi discloses a one-way clutch (8) coupled around said output shaft (3) via a helical spline (C4/L46-47) and shiftable on said output shaft in the axial

direction together with said pinion shaft to transmit rotation of said output shaft to said pinion shaft, wherein a coupling clearance of said helical spline coupling is larger than a clearance between said rolling-contact bearings (26,27) and said pinion shaft. See Figure 1 for bearing clearance and Figure 3 for coupling clearance.

Re clm 12, Isozumi discloses a clearance between said plain bearing (28) and said output shaft (3) is larger than a clearance between said rolling contact bearings (26,27) and said pinion shaft (21).

Re clm 13, Isozumi discloses a speed reduction device (6) is disposed between said armature and said output shaft to reduce rotation of said armature and transmit reduced rotation to said output shaft.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. All the prior art made of record show starters that have different arrangements of the essential working parts.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Pilkington whose telephone number is (571) 272-5052. The examiner can normally be reached on Monday-Friday 8:00AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on (571) 272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JP

JP
6/27/2006

A handwritten signature in black ink, appearing to read 'Richard Ridley', with a stylized, cursive script.

RICHARD RIDLEY
SUPERVISORY PATENT EXAMINER